

REMARKS/ARGUMENTS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1-7, 15-16 and 19 have been rejected under 35 U.S.C. §112, first paragraph; Claims 1-7, 15-16 and 19 have been rejected under 35 U.S.C. §112, second paragraph, as being vague and indefinite; Claims 1, 15 and 19 have been rejected under 35 U.S.C. §102 as being anticipated by AAPA (Applicant's Admitted Prior Art); Claim 2 has been rejected under 35 U.S.C. §103 as being unpatentable over AAPA in view of Bendat et al. and Claims 3-7 and 16 have been indicated as being allowable if rewritten to overcome the rejections under 35 U.S.C. §112, second paragraph, and to include all of the limitations of the base claim and any intervening claims. New claims 21 – 23 have been added and thus, Claims 1-7, 15, 16, 19 and 21 - 23 remain active.

The discussion granted by Examiner Nguyen is hereby acknowledged and sincerely appreciated. Upon conclusion of the discussion, the claims as now amended were agreed as appearing to patentably define over the prior art of record. However, it was noted that an updated search and further review of the prior art of record will be necessary before any indication of allowability can be made. In addition, it was agreed that the amendments to the claims now overcome the rejection of the above dash noted claims under 35 USC12, first and second paragraph.

Considering first then the Examiner's rejections of Claims 1-7, 15-16 and 19 under 35 U.S.C. §112, first paragraph, it is noted that the language of Claim 1 has now been amended for closer compliance with U.S. patent practice and procedure and is supported by the application as originally filed.

Next considering then the rejection of Claims 1-7, 15-16 and 19 under 35 U.S.C. §112, second paragraph, as being vague and indefinite, it is to be noted that the claims have now been amended for compliance with 35 U.S.C. §112.

Consider next then the rejection of Claims 1, 15 and 19 under 35 U.S.C. §102 as being anticipated by AAPA and the rejection of Claim 2 under 35 U.S.C. §103 as being unpatentable over AAPA in view of Bendat et al., it is to be noted that the present invention is directed to a component holding head which can hold an electronic component while avoiding downward sagging and bending or the like of the edge part of an electronic component in the vicinity of the positioning mark. To achieve this object, the vacuum chucking holes hold the electronic component at a position which is on straight lines substantially parallel to edges of the electronic component respectively and substantially perpendicular to the positioning mark of the electronic component, said vacuum chucking holes partially covering the electronic component, said vacuum chucking holes being located in a vicinity of the positioning mark and avoiding the positioning mark. This feature will be explained in detail with Figs. 13 and 14 as follows:

Three vacuum chucking holes (811a) are arranged parallel to an edge of the electronic component (9). The first vacuum chucking hole (811a) from the edge of the electronic component (9) is on the line A perpendicular to the positioning marks (91b). The second and third vacuum chucking holes (811a) from the edge of the electronic component (9) are on the line B perpendicular to the positioning marks (91b). With this arrangement of the vacuum chucking holes (811a), the positioning marks (91b) can be surrounded by the vacuum chucking holes (811a), and thus it is possible for a component holding head (81) to hold an electronic component (9) with avoiding downward sagging and bending or the like of the edge part of an electronic component (9) in the vicinity of the positioning mark (91b).

Consequently, it is possible to conduct a connection of lead wires without misalignment and to fabricate substrates with high accuracy and high quality.

In contrast with this, in AAPA, the component holding head (81) holds an electronic component (9) while avoiding the edge of the electric component (9) in the vicinity of the positioning mark (91b). This is because the electric component (9) has to allow light from an illumination fixture (88) to pass through the positioning marks (91b) so that the imaging device (87) obtains an image data of the positioning marks (91b).

This matter will now be explained in detail with Figs. 4 and 5 which show a situation in which the imaging device (87) picks up an image of the positioning marks (91b, 2b) of the electric component (9) and the substrate (2). In this situation, as shown in Figs. 6 and 7, the vacuum chucking holes (81a) of the component holding head (81) are open to a surface of the electric component (9). The component holding head (81) are open to a surface of the electric component (9). The component holding head (81) holds the electric component (9) at the position which is apart from an edge of the film member (91) with avoiding the positioning mark (91b). For this reason, deformation occurs, such as downward sagging or recurvation of the terminal part of the electric component (9), and therefore a position offset occurs between the position on the image screen of the positioning mark (91b) imaged from directly above and the position of the positioning mark (91b) which should be opposite the actual positioning mark (2b) of the substrate 2. Thus, if the positioning mark (91b) of the electric component (9) is imaged for the purpose of positioning when it is in the deformed condition and the electric component (9) is mounted onto the substrate (2) based on the image data obtained in that condition, there is a risk of misalignment occurring, and of not achieving a good electrical connection.

In AAPA, as shown in Fig. 7, the vacuum chick holes are arranged only on the left side of the positioning mark (91b) in the drawing. More particularly, the component holding

head (81) and vacuum chucking holes (81a) are not arranged over the line A as shown in Fig.

13. Consequently, Applicant cannot agree with the Examiner's conclusions. In the first place, the applied prior art is silent about the provision for vacuum chucking holes along straight lines (A, B) substantially parallel to edges of the electronic component (9), respectively, and subsequently perpendicular to the positioning mark (91b) of the electronic component (9). Consequently, AAPA fails to disclose the important feature of the present invention that "the vacuum chucking holes hold the electronic component at a position which is on straight lines substantially parallel to edges of the electronic component respectively and substantially perpendicular to the positioning mark of the electronic component, said vacuum chucking holes partially covering the electronic component, said vacuum chucking holes being located in a vicinity of the positioning mark and avoiding the positioning mark". In addition, each of the independent claims has been amended to include the limitation that the vacuum chucking holes are positioned so as to hold substantially all portion of the electronic component in engagement with said main electronic equipment holding unit. It is therefore submitted that each of independent Claims 1, 15 and 19 which have these limitations patentable define only AAPA as well as the remaining references of record.

As has been discussed previously, AAPA does not disclose or suggest the present invention and thus 35 U.S.C. §102(a) and §103(a) rejections can be overcome, and the present invention should be allowed. It is further noted in this regard that Bendat et al. fail to rectify the deficiencies noted hereinabove with regard to AAPA.

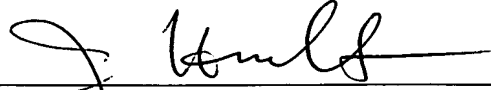
New claims 21-23 further define the locations of the vacuum chucking holes in locating between adjacent positioning marks, unlike AAPA and the remaining reference of record, it is therefore submitted that such claims also merit allowance.

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In view of the foregoing, an early and favorable Office Action is believed to be in order and the same is hereby respectfully requested.

Respectfully submitted,

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